

WHAT IS CLAIMED IS:

1. A method of balancing a load in a General Packet Radio Service (GPRS) network, the GPRS network including a plurality of Service GPRS Supporting Nodes (SGSNs) connected to a mobile node and a plurality of Gateway GPRS Supporting Nodes (GGSNs) connected to a Public Domain Network (PDN),

wherein each of the SGSNs selects one of a plurality of GGSNs capable of supporting a same Access Point Name (APN) and then establishes a session, the selected one having a smallest number of established sessions.

2. The load balancing method according to claim 1, comprising the steps of:

a) receiving an Activate PDP Context Request message from the mobile node;

b) extracting an Access Point Name (APN) related to a correspondent node from the received Activate PDP Context Request message;

c) searching for GGSNs capable of supporting GPRS for the extracted APN;

d) comparing numbers of sessions established with the searched GGSNs, respectively, to each other and selecting a GGSN having a smallest number of established sessions by the SGSN; and

e) requesting a session establishment from the selected GGSN.

3. The load balancing method according to claim 2, wherein
5 the step d) comprises the steps of:

d1) initializing a variable m representing a number of selectable GGSNs to the number of GGSNs searched at step c), and initializing a variable n representing selection priorities of the GGSNs to "1";

10 d2) ascertaining the number of sessions established with each of the GGSNs searched at step c);

d3) selecting a GGSN having sessions, the number of which is n-th in an ascending order, of the searched GGSNs and requesting an IP address corresponding to the selected GGSN
15 from a Domain Name System (DNS) server;

d4) determining whether the IP address corresponding to the selected GGSN is obtained from the DNS server;

d5) decreasing the variable m by "1" if the IP address is not obtained at step d4), and determining whether the variable
20 m is "0";

d6) transmitting an error message if the variable m is "0", while increasing the variable n by "1" and then performing steps d3) to d6) if the variable m is not "0"; and

d7) setting the selected GGSN to a node from which the
25 SGSN will request a session establishment if the IP address is

obtained from the DNS server at step d4).

4. The load balancing method according to claim 3, wherein the step d2) is performed so that the SGSN searches session
5 configuration information stored after establishing a session with each of the GGSNs.

5. A method of setting up a call in a General Packet Radio Service (GPRS) network, the GPRS network including a plurality
10 of Service GPRS Supporting Nodes (SGSNs) connected to a mobile node and a plurality of Gateway GPRS Supporting Nodes (GGSNs) connected to a Public Domain Network (PDN), comprising the steps of:

a) transmitting an Activate PDP Context Request message
15 including Access Point Name (APN) information to a corresponding SGSN by the mobile node;

b) searching for GGSNs capable of supporting GPRS for APN included in the Activate PDP Context Request message by the SGSN having received the Request message;

20 c) treating the Activate PDP Context Request message as an error and informing the mobile node that a session establishment is disapproved if any GGSN corresponding to the APN does not exist at step b);

d) ascertaining a number of sessions established with each
25 of searched GGSNs by the SGSN if one or more GGSNs

corresponding to the APN exist at step b);

e) requesting from a Domain Name System (DNS) server an IP address corresponding to a GGSN having a smallest number of established sessions of the plurality of the searched GGSNs;

5 f) obtaining the IP address in response to the request and transmitting a Create PDP Context Request message to the IP address;

g) receiving the Create PDP Context Request message, performing resource allocation and session information
10 configuration, generating a Create PDP Context Response message and transmitting the Create PDP Context Response message to the corresponding SGSN by a GGSN designated by the IP address; and

h) receiving the Create PDP Context Response message, configuring session information and transmitting an Activate
15 PDP Context Accept message to the mobile node by the SGSN.

6. The call setup method according to claim 5, further comprising the step of repeatedly performing an operation of requesting from the DNS server an IP address corresponding to a
20 GGSN having a next smallest number of established sessions until the IP address corresponding to the previously selected GGSN is obtained if the IP address is not obtained from the DNS server.